Volunteer Lake Assessment Program Individual Lake Reports

NUTT POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	415	**Max. Depth (m):**	9.2	**Flushing Rate (yr^{-1}):**	3.1
Surface Area (Ac.):	16	**Mean Depth (m):**	4	**P Retention Coef:**	0.53
Shore Length (m):	950	**Volume (m^3):**	260,500	**Elevation (ft):**	237

TROPHIC CLASSIFICATION

Year	Trophic class
1981	EUTROPHIC
1995	MESOTROPHIC

KNOWN EXOTIC SPECIES

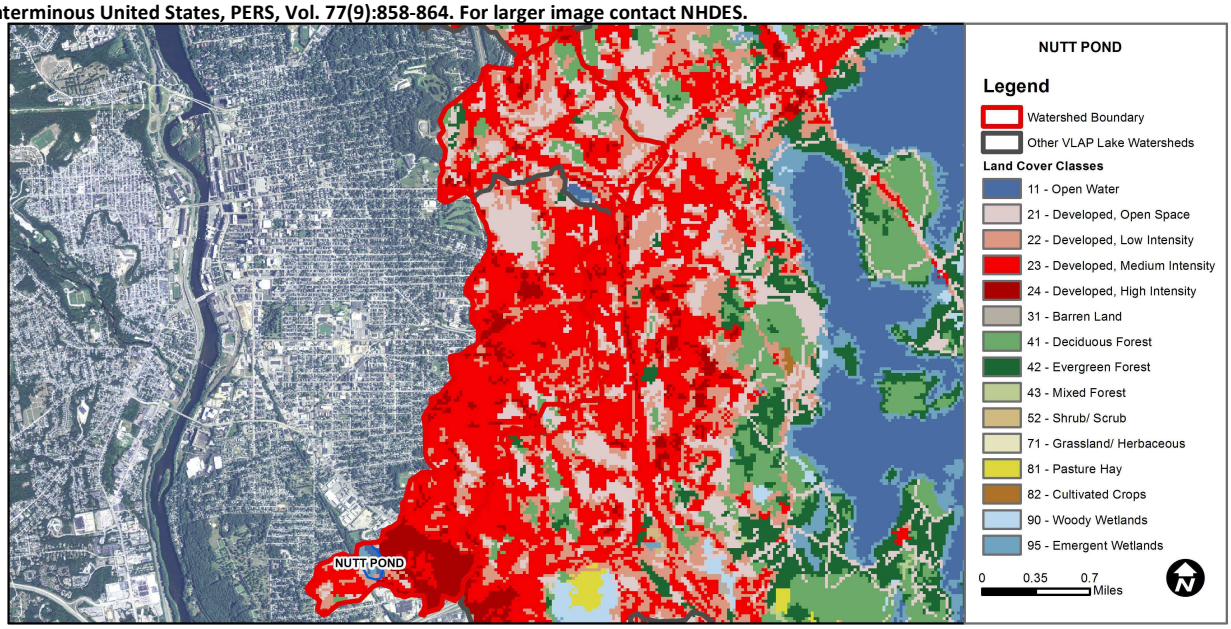
Brazilian Elodea

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

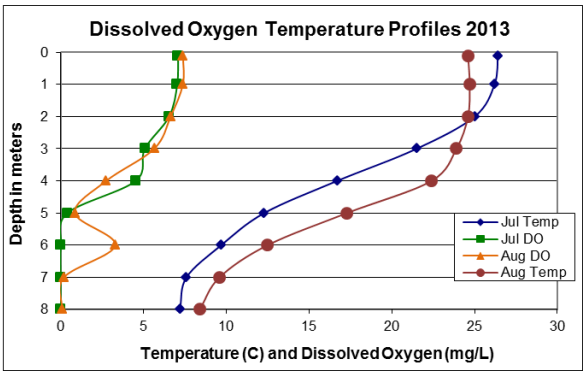


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	0.8	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	14.4	Deciduous Forest	3.22	Pasture Hay	0
Developed-Low Intensity	18.4	Evergreen Forest	0.59	Cultivated Crops	0
Developed-Medium Intensity	50.9	Mixed Forest	0	Woody Wetlands	0.01
Developed-High Intensity	10.9	Shrub-Scrub	0	Emergent Wetlands	0.52

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
NUTTS POND, MANCHESTER, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated in June and indicative of an algal bloom, however decreased to more normal levels in July and August. Historical trend analysis indicates significantly decreasing (improving) chlorophyll since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels were elevated and much greater than the state medians. Inlet chloride levels exceed the chronic chloride standard. Historical trend analysis indicates highly variable epilimnetic conductivity between years.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly elevated, greater than the state median and remained relatively stable from June to August. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus since monitoring began. Metalimnetic phosphorus levels were slightly elevated, particularly in July which could indicate a layer of algae at that depth. Hypolimnetic phosphorus levels were elevated and increased as the summer progressed due to the release of phosphorus from bottom sediments under anoxic conditions.
- **TRANSPARENCY:** Transparency was lowest in June during the algal bloom and improved in July and August. Viewscope transparency was approximately equal to the state median. Historical trend analysis indicates highly variable transparency between years.
- **TURBIDITY:** Epilimnetic turbidity was slightly elevated in June however decreased in July and August and was within the historical average. Metalimnetic turbidity was relatively stable on each sampling event and was within the historical average. Hypolimnetic turbidity was elevated in July and August likely due to the release of organic compounds from bottom sediments under anoxic conditions. Inlet and Outlet turbidity was relatively low.
- **PH:** pH levels were less than the desirable range of 6.5 – 8.0 units in the hypolimnion. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **RECOMMENDED ACTIONS:** Nutts Pond is surrounded by a highly urban environment lending itself to poor water quality conditions including elevated phosphorus and chloride. However, chlorophyll and epilimnetic phosphorus levels have significantly improved, and while the trend is not yet significant, transparency appears to have improved as well. Keep up the great work and we hope to see these positive changes continue.



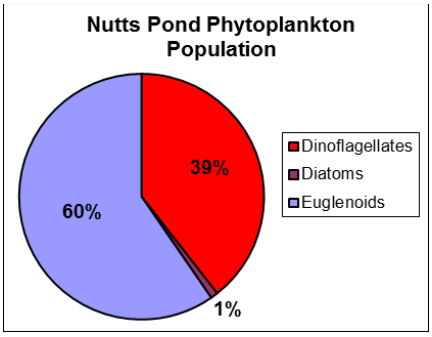


Table 1. 2013 Average Water Quality Data for NUTT POND

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	17.8	8.13	155	723.3	18	3.08	3.21	1.44	7.05
Metalimnion				1108.3	25			2.17	6.83
Hypolimnion				2186.7	83			46.21	6.36
Inlet			250	992.0	24			0.69	6.99
Outlet				722.7	18			1.57	7.03

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Improving	Data significantly decreasing.
Conductivity	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.